

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A metal complex-protein composite, comprising a protein-an apoprotein having a cavity therein and a metal complex, wherein:
the apoprotein is selected from the group consisting of apomyoglobin,
apohe moglobin, apoheme oxygenase, apocatalase, apo ferritin, and their variants;
the metal complex is prepared by complexation of a metal ion, which is
selected among the group consisting of rhodium, ruthenium, and palladium, with a ligand;
the metal ion is selected from the group consisting of rhodium, ruthenium, and
palladium;
said the metal complex-protein composite having has a specific structure such
that the metal complex is received in the cavity of the protein;
the metal complex is selected such that the metal complex does not cause
degradation or instability of the apoprotein; and
amino acid residues of the apoprotein coordinate with the metal complex.
2. (Currently Amended) A The metal complex-protein composite in accordance
with of claim 1, wherein the protein apoprotein is any one of proteins having either of
comprises an amino acid residue that coordinates to the selected metal ion of the metal
complex and an amino acid residue located in the cavity that forms a non-covalent bond to
the ligand of the metal complex in the cavity thereof, multimers of such proteins, and variants
of such proteins.
3. (Currently Amended) A The metal complex-protein composite in accordance
with of claim 1, wherein the protein apoprotein having the cavity is any one of proteins

having the cavity in a heme site obtained by removing a heme from heme containing proteins, multimers of such proteins, and variants of such proteins a heme-containing protein.

4. (Cancelled) .

5. (Currently Amended) A-The metal complex-protein composite in accordance with of claim 4, wherein:

the protein apoprotein is an-a variant of an apomyoglobin variant having a replacement of histidine as a 64th amino acid residue of apomyoglobin; and
a histidine hydrogen bonded to oxygen and combined with iron in myoglobin is replaced in the variant.

6. (Currently Amended) A-The metal complex-protein composite in accordance with of claim 1, wherein the metal complex-ion is a complex of rhodium with a compound having a phosphino group as the ligand.

7. (Currently Amended) A-The metal complex-protein composite in accordance with of claim 6, wherein the metal complex is a complex of rhodium with the ligand is a compound having at least two diphenylphosphino groups as the ligand.

8. (Currently Amended) A-The metal complex-protein composite in accordance with of claim 6, wherein the metal complex has the ligand expressed is given by Formula (1):

$$R^1 R^2 P - J - PR^3 R^4 \quad (1)$$

where:

R¹, R², R³ through and R⁴ each independently represents any of completely identical, partially identical, and completely differenta-substituted hydrocarbon having 1 to 10 carbon atoms, and a non-substituted hydrocarbons of having 1 to 10 carbon atoms, and a substituted phenyl and or a non-substituted phenyls, and

J represents any of a substituted hydrocarbon having 1 to 10 carbon atoms, a
and non-substituted hydrocarbons of having 1 to 10 carbon atoms, or -and two adjacent
carbon atoms included in a benzene rings.

9. (Currently Amended) A hydrogenation catalyst, which is a comprising the
metal complex-protein composite in accordance with of claim 1, the hydrogenation catalyst
being capable of -and works to accelerate accelerating hydrogenation of an olefin in water.